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past shaving, or rather the extraction of hair, was done with a shark's tooth. It is still used to-day, but when possible a razor blade is obtained from a trader. Finger-nails are shortened by biting them.

In addition to hair decorating there are facial decorations, and the favourite style for both sexes is the painting of a yellow circle around one eye. A broad band of white lime on the forehead is likewise considered attractive. There are other types of facial adornment which are used only in connection with ritual dancing and are described in that context.

The familiar disease, ringworm, makes a person of either sex undesirable for marriage, but not for intercourse. For example, Landa, from the village of Langania, was married when quite young, and her husband died after a brief period. Afterwards she contracted the ringworm disease. For quite a few years now she has been noted for her many lovers, by some of whom she has had children, but none of these lovers will marry her because of her skin disease. The sexual act may be performed with a minimum of body touching, but the men are afraid of catching the disease if they marry her. However, just before I left New Ireland Landa married an elderly man, who, I was told, could get no one else. Aside from the ringworm and a rather large stomach, she was not unattractive, and seemed to have a pleasant and rather vivid personality, and was one of the most energetic and industrious of the women at the communal food preparations.

In general, the physical parts of the body which have aesthetic and sexual attraction for the Melanesian in New Ireland do not differ so much from those of our own culture. They are mainly health, the breasts, the colour of the skin, and the hair. Eyes are also regarded as of importance, and small ones are considered the most attractive.

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163 [171] economic conditions, time of marriage, etc., and does not therefore invalidate Carr-Saunders' theory.

Although it is not absolutely certain, it appears that the people of this study have maintained a stable birth rate over three generations, yet at the same time there seems to be an increase in the percentage of sterile women. If the number of sterile women are grouped according to their generation, the percentage of sterility over the three generations can be measured. Table 3 presents this.

TABLE 3

Sterility Rates

GENERATION	NUMBER OF STERILE WOMEN	PER CENT OF WOMEN WHO ARE STERILE
I	8	5.3
II	16	16.6
III	11	20.
Totals	35	11.8

It can be seen that the percentage of sterile women jumps from 5.3 per cent to 20 per cent in three generations.[18] There is not the same possibility for error in this rate as there is in the issue rate for the women of generation *I*, for if the informants forgot to give children of these dead women, it would have made the sterility rate higher than it should be and the corresponding increase in sterility to the present time would be still greater. The same fault of memory would have made the fecundity of these women lower than it should be, and there is thus the possibility that the birth rate may have declined instead of being stable. The error could only be one way and we know therefore that the birth rate has not increased.

163 164 It is the opinion of the writer that the low rate of fecundity and the increase of sterility among these Melanesian women may be due to the introduction of syphilis and gonorrhoea, usually the accompaniment

[18] cf. Pitt-Rivers, G. H. L. F., The Clash of Culture, *London*, 1927, Table IV, Appendix II, taken from Indian Population of the U. S. and Alaska, 1910, p. 157. The sterility for North American Indian and mixed-blood women between the ages of 15 and 44 years, and married one year or more, varies from 4.3 to 16.6, the highest percentage falling among the marriages of full-bloods.

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of white civilization. Gonorrhoea is considered the cause of a large percentage of sterility, and when not causing complete sterility frequently limits the family to one or two offspring. There is a difference of opinion on the effect of syphilis on the pregnant woman and her offspring, but there appears to be evidence that syphilis tends to reduce the number of pregnancies. In a study made on syphilitic and non-syphilitic families, the number of pregnancies in syphilitic families was 2.58 compared with 3.8, 4.4 and 5.5 in non-syphilitic families.[14] The evidence for the presence of these diseases among this people, and their further connection with the vital statistics will be discussed in the latter part of this paper. Here it is only necessary to indicate a possible relationship between them and the birth and sterility rates.

Death Data

Having learned that the birth rate has not increased, i.e., that it is either stable or declining, it is of interest to note the death rate for the same people. The following table presents the number and percentage of those born in each of the three generations who died before marriage. The time of death is indicated by the physiological periods described in the introduction.

TABLE 4

Death Rates Based on Number of Births

GENERATION	BORN DEAD		DIED DURING LACTATION PERIOD		DIED DURING CHILDHOOD		DIED DURING YOUTH		DIED AS YOUNG MAN OR WOMAN		TIME OF DEATH UNCERTAIN		TOTAL DYING BEFORE MARRIAGE	
	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
I	1	.2	13	3.	25	5.7	11	2.5	17	3.9	19	4.3	86	19.5
II	1	.5	11	5.4	12	5.9	3	1.5	1	.5	2	.1	30	14.9
III	3	1.8	24	14.9	6	3.6	2	1.2	4	2.4	1	.6	40	24.3
IV	1	.5	29	16.3	..	...	..	...	..	...	..	...	..	...
Totals	6	.6	77	7.9	43	5.4	16	2.	22	2.7	22	2.7	156	19.5

There has been an increase in the mortality over the three generations. Among the offspring of generation *I*, 19.5 per cent of those born died before reaching the age of marriage, while 24.3 per cent of the children of group number *III* have already died before marriage. This

[14] Solomon, H. C. & M. H.—Syphilis of the Innocent, *Washington*, 1922, p. 128.

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based on the total number of deaths occurring from birth to the end of childhood for all four generations. These percentages are based on incomplete numbers, as this kind of recording was done only during the latter part of the writer's expedition, and therefore for a limited number of genealogies. But they are sufficient to show the general trend.

This table shows that the infant mortality is higher for the first and second born than for those born later. Vital statistics for other peoples show this same tendency.

Considering the death data, it is quite obvious that there has been a decrease in the number of people surviving until the age of reproduction, because more of them are dying during the period of lactation. Since there has been no increase in the number of births, there must be a decline in the population. It is difficult to ascertain the cause for this increase in infant mortality when there are no records of the causes of death. Once again, it is probable that the cause of death might be traced to the introduction of white man's diseases. This will be discussed more fully in the Summary, but here it is important to note that tuberculosis is one of the introduced diseases which might account for the heavy increase in infant mortality. It is generally agreed that if the mother is tuberculous the chance for the infant living is very much lessened.[16] Also, a large percentage of mortality from tuberculosis occurs with young children.[17]

Syphilis, another introduced disease, tends to increase the deaths due to accidents of pregnancy, such as abortions, miscarriages and stillbirths.[18] It must be remembered that premature births, or abortions,

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[16] Woodbury, R. M.—Causal Factors in Infant Mortality, U. S. Dept. of Labor, Children's Bureau, Pub. No. 142, p. 35.

[17] Bushnell, G. E.—A Study in the Epidemiology of Tuberculosis, *New York*, 1920, p. 163.

[18] Solomon, H. C. & M. H.—Syphilis of the Innocent, *Washington*, 1928, p. 128. cf. Jean, P. C.—Syphilis and its Relation to Infant Mortality, *Am. Jour. of Syph.*, Vol. III, No. 1, 1919, p. 122. "In a syphilitic family 30 per cent of the pregnancies terminate in death at or before term, a waste three times greater than is found in non-syphilitic families."

Cf. also Williams, J. W.—The Significance of Syphilis in Prenatal Care and in the Causation of Foetal Death, *Bull. of the J. H. H.*, Vol. XXXI, No. 351, May, 1920, pp. 142-145. In a study made on the causes of 302 foetal deaths, 89.3 per cent of the deaths are attributable to 7 groups of causes, of which syphilis is the most important as it accounts for 34.44 per cent of the total number.

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psychological effect of this will be on the birth and death rates of future generations can be, at the moment, only a matter of conjecture.

It is thus necessary to point out that while these psychological factors may be of significance in accounting for a declining population, they are not present among this particular declining people. The adult women on whom this study was made have not been to mission schools and the effect of mission teaching on them is very superficial. The fundamental aspects of their culture have not been destroyed and they have not lost their interest in life.[33]

There is one factor, mentioned by Dr. Rivers but not stressed, which might tentatively be considered as a possible cause for the decline in population, and that is the introduction of the so-called "white man's diseases." While there are no medical records for the group of people on whom this study was made, there are some fragmentary medical records for the whole Mandated Territory of New Guinea, which includes New Ireland.[34] These are based on treatments in native hospitals at the European centers and the natives are mostly indentured laborers from all over the territory. The records can be used to indicate that certain diseases exist in the Territory, some of which appear more widespread than others. It is of interest to note here those that might have any influence on infant mortality.

The reports all mention tuberculosis as being rather widespread. We are told that "tuberculosis, pneumonia and other respiratory diseases cause approximately 50 per cent of all native deaths in Rabaul," and that these diseases are new among these native races.[35] In 1926-27 tuberculosis accounted for about 32 per cent of the total deaths of natives in the series under review.[36] In 1927-28, 103 cases of tuberculosis were treated in native hospitals, and these cases had a mortality rate of 33 per cent, accounting for 13 per cent of the total mortality of hospital cases.[37] In 1928-29, 57 per cent of all the native deaths occurring in native hospitals were due to tuberculosis, pneumonia and dysentery.[38]

[33] In the writer's forthcoming book, the life of the society as it is functioning today will be described in detail. The contact of other cultures will not be neglected and an attempt will be made to evaluate the effect of this contact.

[34] Reports to the Council of the League of Nations on Administration of the Territory of New Guinea, *Canberra*.

[35] *Ibid.*, 1924-25, p. 17.

[36] *Ibid.*, 1926-27, p. 133.

[37] *Ibid.*, 1927-28, p. 89.

[38] *Ibid.*, 1928-29, p. 26.

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164 From this evidence it would appear that tuberculosis is fairly widespread. The effect of tuberculosis in increasing infant mortality has already been pointed out.

164 342 Housing conditions are of importance in this connection. The house consists of one room, with walls of bamboo, a thatched roof, and the beaten ground as a floor. There are no windows and just one door, which is usually kept shut when no one is in the house. It is quite impossible for any sun to get inside the house. While the native spends most of his time outdoors, he sleeps indoors and is there when it rains. Sputum is carelessly deposited on the ground, which serves as the floor, and babies crawl around on this ground. It is obvious that the infant is brought into very close contact with foci of infection.

164 The reports to the League of Nations also indicate that gonorrhea is widespread. In 1928-29, 297 males and 145 females were treated and more than half of the cases from the whole of the Mandated Territory were in New Ireland.[39] The report for 1924-25 says that "The central campaign of the year was that devoted to the combatting of gonorrhea. Over a thousand natives in all were treated for the disease, but owing to the lack of funds the campaign was unable to be pushed to a satisfactory conclusion."[40] Since gonorrhea is usually held to be the cause of a large percentage of sterility,[41] it is possible that this disease might be a cause for the increasing sterility among these women.

Syphilis is not mentioned in the Reports to the League of Nations, but this does not necessarily mean that the natives do not have the disease. The reports on autopsies performed give such causes of death as tuberculosis, dysentery, pneumonia, tropical ulcers, enteric fever, miscellaneous septic conditions, etc. It is quite possible that a native suffering from any of these might have syphilis at the same time, but that it might not be considered the cause of death. Particularly might this be so, since it is common knowledge that syphilis exists among the natives, even if one can get no statistics on the matter. If three or four boys leave their village to work in the white man's capital, or on some large plantation and return with syphilis, it would not take long for the disease to spread, in view of their rather promiscuous sexual life. The

[39] Report to the Council of the League of Nations, etc., 1928-29, p. 26.
[40] *Ibid.*, 1924-25, p. 17.
[41] Graves, W. P.—Gynecology, *Philadelphia*, 1928, p. 668. "Gonorrhea, of all the inflammations that attack the tubes (fallopian) is by far the most destructive of fertility."

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possible connection of syphilis with reducing the birth rate and increasing the number of deaths due to accidents of pregnancy has been noted.

The difficulty with most theories accounting for the decline in native populations is that there is very little factual material to prove them. But it would seem from statistics presented in this study made through genealogies, that one small group of a declining people is being exterminated because a large per cent of their offspring are dying in infancy and therefore do not have a chance to reproduce themselves. The physiological causes for this increase in infant mortality are suggested only tentatively, since there are no adequate medical records, and because the writer is not a physician and could make no medical investigation. However, a thorough study of the effect of introduced diseases might reveal much information on the causes for the decline of these people.[42]

[42] I am indebted to M. Powdermaker for making the charts accompanying this article.